

THAT WHICH IS CLAIMED IS:

1. A method, comprising:

purifying a phenol product, comprising phenol and a contaminating concentration of an hydroxyketone, by contacting, under suitable contacting conditions, said phenol product with a treatment catalyst consisting essentially of alumina and a Group VIA metal.

2. The method of claim 1 wherein the amount of phenol in said phenol product is in the range of from 95 weight percent upwardly to about 100 weight percent.
3. The method of claim 2 wherein said contacting conditions include a contacting temperature in the range of from about 50°C to about 250°C and a contacting pressure upwardly to about 100 psig.
4. The method of claim 3 wherein said treatment catalyst has a concentration of silica less than about 25 weight percent of the treatment catalyst.
5. The method of claim 4 wherein said Group VIA metal is molybdenum which is present in the treatment catalyst in an amount in the range of from about 1 percent by weight to about 18 percent by weight of the treatment catalyst.
6. The method of claim 5 further comprising yielding a treated phenol product having a concentration of said hydroxyketone that is reduced below the concentration thereof in said phenol product.

7. The method of claim 6 wherein said concentration of said hydroxyketone in said treated phenol product is less than about 3 ppmw.
8. The method of claim 1 wherein said treatment catalyst has a concentration of silica less than about 25 weight percent of the treatment catalyst.
9. The method of claim 8 wherein said Group VIA metal is molybdenum which is present in the treatment catalyst in an amount in the range of from about 1 percent by weight to about 18 percent by weight of the treatment catalyst.
10. The method of claim 8 wherein said contacting conditions include a contacting temperature in the range of from about 50°C to about 250°C and a contacting pressure upwardly to about 100 psig.
11. A method, comprising:  
contacting under suitable reaction conditions a phenol stream, comprising phenol and hydroxyketone, with a treatment catalyst having a low silica content and further comprising alumina and a Group VIA metal.
12. The method of claim 11 wherein said reaction conditions include a contacting temperature in the range of from about 50°C to 250°C and a contacting pressure upwardly to about 100 psig.

13. The method of claim 12 wherein the amount of phenol in said phenol stream is in the range of from 95 weight percent upwardly to about 100 weight percent.
14. The method of claim 13 wherein the amount of silica in said treatment catalyst is in the range of less than about 25 weight percent of the total weight of the treatment catalyst and the amount of Group VIA metal in said treatment catalyst is in the range of from about 1 weight percent to about 18 weight percent of the treatment catalyst.
15. The method of claim 14 further comprising yielding a treated phenol product having less than about 3 ppmw hydroxyketone.
16. The method of claim 11 wherein said treatment catalyst has a concentration of silica less than about 25 weight percent of the treatment catalyst.
17. The method of claim 16 wherein said Group VIA metal is molybdenum which is present in the treatment catalyst in an amount in the range of from about 1 percent by weight to about 18 percent by weight of the treatment catalyst.
18. The method of claim 16 wherein said contacting conditions include a contacting temperature in the range of from about 50°C to about 250°C and a contacting pressure upwardly to about 100 psig.
19. A method of purifying a phenol stream comprising phenol and hydroxyketone, said method comprises:

providing a reactor having an inlet and an outlet and which defines a reaction zone containing a low silica-containing treatment catalyst comprising alumina and a Group VIA metal;

introducing said phenol stream into said reaction zone through said inlet;

operating said reaction zone under suitable reaction conditions to convert at least a portion of said hydroxyketone in said phenol stream to another compound; and

removing a purified phenol stream from said reaction zone as a reactor effluent through said outlet.

20. The method of claim 19 wherein the amount of silica in said low silica-containing treatment catalyst is in the range of less than 25 weight percent of the total weight of said low silica-containing treatment catalyst and the amount of Group VIA metal in said treatment catalyst is in the range of from about 1 weight percent to about 18 weight percent of the total weight of said low silica-containing treatment catalyst.
21. The method of claim 20 wherein the amount of phenol in said phenol stream is in the range exceeding 95 weight percent of the total phenol stream.
22. The method of claim 21 wherein said reaction conditions include a contacting temperature in the range of from about 50°C to about 250°C and a contacting pressure upwardly to about 100 psig.

23. The method of claim 22 wherein the concentration of hydroxyketone in said reactor effluent is less than about 3 ppmw.
24. The method of claim 19 wherein said reaction conditions include a contacting temperature in the range of from about 50°C to about 250°C and a contacting pressure upwardly to about 100 psig.
25. The method of claim 20 wherein said treatment catalyst has a concentration of silica less than about 25 weight percent of the treatment catalyst.
26. The method of claim 25 wherein said Group VIA metal is molybdenum which is present in the treatment catalyst in an amount in the range of from about 1 percent by weight to about 18 percent by weight of the treatment catalyst.
27. The method of claim 25 wherein said contacting conditions include a contacting temperature in the range of from about 50°C to about 250°C and a contacting pressure upwardly to about 100 psig.
28. A reactor system for purifying a phenol stream said reactor system comprises:
- a reactor having an inlet and an outlet and which defines a reaction zone containing phenol and a low silica-containing catalyst comprising alumina and a Group VIA metal.

29. A phenol composition made by any one of the methods of claims 1-28.
30. A high purity phenol composition, comprising:
- at least 95 weight percent phenol and less than 5 ppmw benzofuran.
31. A high purity phenol composition of claim 30 which has been treated with a treatment catalyst.
32. A high purity phenol composition of claim 31 wherein said treatment catalyst has a low silica content and comprises alumina and a Group VIA metal.
33. A high purity phenol composition, comprising:  
phenol and  
benzofuran  
wherein said phenol is present in said high purity phenol composition in an amount of at least 98 weight percent of the total weight of said high purity phenol composition, and wherein said benzofuran is present in said high purity phenol composition in an amount of less than 2 ppmw.
34. The high purity phenol composition of claim 33 where said phenol is present in an amount of at least 99 weight percent and said benzofuran is present in an amount of less than 1 ppmw.
35. The high purity phenol composition of claim 34 which has been treated with a treatment catalyst having a low silica content and comprising alumina and a Group VIA metal.